

BIOLOGY Grade12**Chapter one: Communication and co-ordination****1. Define nervous system?**

- ❖ nervous system is a complex network of nerves and cells that carry messages to and from the brain and spinal cord to various parts of the body

2. What are types of nervous system?

- ❖ they are two types and they are Central nervous system and peripheral nervous system

3. What are types of Central nervous system?

- ❖ they are brain and spinal cord

4. Define nerve cell?

- ❖ =is the basic functional unit of nervous system

5. What is nerve impulse?

- ❖ is an electrical signal that is transmitted along a nerve fibre.

6. What consist of neurons?

- ❖ It consists of a cell body (centron) and extensions called dendrites

7. State the types of neurons and their functions?

- ❖ Types of neuron are three namely. a) sensory b) motor and c)relay neuron are:

A)Sensory neuron transmits sensory impulse from receptors to the central nervous system

b) Motor neuron transmits motor impulse from central nervous to the effectors organs (muscles and gland)

c) Connector neuron or relay neuron transmit relay impulse from sensory neuron to motor neuron.

8. Describe the parts of the brain?

- ❖ The brain consists of three parts Namely. forebrain, midbrain &hind brain

- ☐ The first part of the brain which is major part of the consist of: cerebrum, thalamus and hypothalamus.

- ☐ The second part which is the smallest part of the brain also known as corpora quadrigemia it connects the forebrain to the hindbrain

- ☐The third part which is middle part of the brain consists of major parts called cerebellum and medulla oblongata. Cerebellum's main function is to maintenance of body balance and posture while medulla oblongata controls involuntary activities

9. What is the weight of the brain?
- ❖ the brain weights approximately 1.3kg to 1.4kg equal to about 1370g in men and about 1200g in women
10. How long is spinal cord?
- ❖ the spinal cord is about 43cm long in adult women and 45cm long in adult men and weights about 35-40grams and it lies I vertebral column
11. What is called the membrane that covers the brain?
- ❖ meninges
12. What consist of meninges? And what are they?
- ❖ it consist of dura, pia and arachnoid matter and they are
 - ❖ The Dura matter is the tough outer membrane covering the brain and spinal cord of vertebrates.
 - ❖ The pia matter is the innermost membrane covering the brain and spinal cord.
 - ❖ Arachnoid layer is a narrow space between the dura and pia matter.
13. Define eyelash?
- ❖ The eyelash is the **edges** of the eyelids are many hairs.
14. What are the main major parts of the brain?
- ❖ They are forebrain, mid-brain and hindbrain. Each of these regions consists of various parts
15. What the forebrain consist of?
- ❖ it consists of the cerebrum, the thalamus, hypothalamus and the pituitary gland.
16. What is the other name of midbrain?
- ❖ also known as corpora quadrigemia
17. What are the major parts of hindbrain?
- ❖ The major parts of the hindbrain are cerebellum and medulla oblongata.
18. What are cranial nerves?
- ❖ These nerves are those arise from the brain and form part of the peripheral nerve system associated with receptors and effectors in the head.
19. Define spinal cord?
- ❖ spinal cord is the posterior extension from the brain to the tail
20. What are names of cranial and their functions?
- ❖ The names and major functions of these nerves are listed below.

<i>Cranial name</i>	<i>Function</i>
Olfactory Nerve	Sense of smell
Optic Nerve:	Vision
Oculomotor Nerve	Eyeball and eyelid movement
Trochlear Nerve	Eye movement
Trigeminal Nerve:	Functions controlled include facial sensation and chewing
Abducent Nerve	Eye movement
Facial Nerve	Facial expressions and sense of taste
Vestibulocochlear Nerve	Equilibrium and hearing
Glossopharyngeal Nerve:	Swallowing, sense of taste, and saliva secretion
Vagus Nerve:	Smooth muscle sensory and motor control in throat, lungs , heart , and digestive system
Accessory Nerve:	Movement of neck and shoulders
Hypoglossal Nerve:	Movement of tongue, swallowing, and speech

21. what is the function of the following terms:

- a. cerebrum
 - b. cerebellum
 - c. medulla oblongata
 - d. pituitary glands
 - e. hypothalamus
- ❖ a) cerebrum controls the voluntary movement such as limbs and also controls learning ,memoir and human individuality
 - ❖ b) cerebellum it maintenance body balance and posture
 - ❖ c) medulla oblongata controls in voluntary movements such as breathing and vomiting

- ❖ d) **pituitary glands** controls the rest of glands
- ❖ e) **hypothalamus** it controls appetite and sleep

22. Define reflex action?

- ❖ is a rapid automatic response to a certain stimulus

23. What are types of reflex action and define each one?

- ❖ There are two types of reflex actions, and they are
- ❖ **a simple reflex action** there is a specific single and automatic response to a particular stimulus Examples of reflex action include withdrawal of finger from a hot or sharp object, blinking
- ❖ **Conditioned Reflex Action** is an automatic response which can be evoked from an animal by unrelated stimulus substituted for the one which normally **elicits the response**

24. What is the difference between simple and conditional reflex action?



<i>Simple Reflex Action</i>	<i>Conditioned Reflex Action</i>
1. Single stimulus to bring about response. 2. Simplest form of behaviour and is independent of experience. 3. Sensory and motor components are the same at all times.	1. Repeated stimulus to bring about response. 2. Involves modification of behaviour and dependent on experience. 3. Primary sensory component is replaced by a secondary sensory component but the motor component remains unchanged.

25. Define synapse?

- ❖ A synapse is the junction between dendrites of two adjacent neurons

26. Define hormone?

- ❖ Hormones are organic compounds which are either protein or steroids in nature

27. Which is the master gland of endocrine glands?

- ❖ pituitary gland

28. Where thyroxine hormone is found?

- ❖ at the neck region

29. What is the function of thyroxine?

- ❖ controls basal metabolic activity

30. What will happen if thyroxine becomes less?

- ❖ goiter

31. What will happen if over secretion and under secretion of thyroxine?

- ❖ Hypothyroidism (under-secretion)
- ❖ Hyperthyroidism (Overproduction of Thyroxine)

32. What are effects of Hypothyroidism (under-secretion)?

- ❖ low metabolic rate,
- ❖ reduced heartbeat and breathing rate
- ❖ low body temperature.
- ❖ They are mentally and physically sluggish.
- ❖ The low physical activity results into weight gain (obesity),

33. What are effects of Hyperthyroidism (Overproduction of Thyroxine)?

- ❖ leads to increased metabolic rate resulting in increased heartbeat,
- ❖ Breathing rate and high temperature.
- ❖ Individuals show nervousness, restlessness and are easily irritable.
- ❖ Extreme hyperthyroidism can lead to heart failure, a condition known as thyrotoxicosis.

34. What are types of Adrenaline?

- ❖ The outer part is called adrenal cortex and an inner part is called adrenal medulla.

35. What are the Differences between endocrine and nervous systems?



<i>Endocrine system</i>	<i>Nervous system</i>
(i) Chemical substance to evoke a response,	(i) Nerve impulse to evoke a response.
(ii) Chemical transmitted through blood,	(ii) Impulse only through nerve fibre.
(iii) Responses slow but affect several parts of the body.	(iii) Responses quick, specific and localised.
(iv) Effects are long-lasting,	(iv) Effects rapid and short-lived.
(v) Response takes place involuntarily.	(v) Takes place voluntarily & involuntarily.

36. Define drug?

= A drug is any chemical substance which when taken into the body has psychological and physiological effects

37. What are effects of drug abuse?.

- ❖ May lead to cancer of the lungs, throat and that of the urinary bladder.
- ❖ May also cause stomach ulcers.
- ❖ Damage to many tissues of the heart and the liver leading to heart attacks and liver cirrhosis respectively.
- ❖ Interference of temperature regulation leading to excessive heat loss,
- ❖ Damage caused to the brain may lead to sleeplessness (insomnia),
- ❖ loss of memory (amnesia), deliriums, hallucinations and mental illness (madness).
- ❖ Irreversible damage to vital body tissues and organs may eventually lead to death.

38. What are sense organs?

- ❖ They are the ear, eye, skin, nose and tongue

39. Define eye? and tell where it locates?

- ❖ The eye is a complex sense organ, whose function is to receive light by which an animal perceives and distinguishes objects in its immediate environment.
- ❖ The eye is located in a socket in the skull called orbit which offers protection against physical damage

40. State the structure of the eye?

- ❖ Outer layer or sclera
- ❖ Middle layer or choroids
- ❖ Inner layer or retina.

41. Describe sclera?

- ❖ Sclera is a white fibrous layer which protects the delicate inner part of eye ball and helps in maintaining its shape. The sclera contains and forms the cornea at front of the eye.

42. What is choroid?

- ❖ Choroid is the dark pigmented membranous middle layer that contains numerous blood vessels.

43. Define iris?

- ❖ Iris is a thin round sheet of muscular tissue

44. State the sets of muscles that contain the iris?

- ❖ Circular and radial

45. What is the function of choroid?

- ❖ is to absorb stray light to prevent internal reflection within the eye and to provide nourishment to the eye.

46. What is eyelash?

- ❖ the eyelash is the edge of the eyelids is many hairs

47. State the functions of ciliary body and lens?

- ❖ ciliary body function is to curvature and lens function is to reflect light
- ❖ lens function is Focuses light on the retina

48. Define pupil?

- ❖ is the opening in the iris which allows light to enter the eye .

49. State the function of vitreous humour?

- ❖ is to help maintain the spherical shape of the eyeball, and also to refract incoming light towards the retina

50. State the muscles that move the eye up and down?

- ❖ the muscles that move the eye up and down are superior rectus muscle and inferior rectus muscle

51. Define accommodation of the eye?

- ❖ is the adjustment of the eye structures to bring an image from a near or far object into sharp focus on the retina.

52. What is the difference b/w Accommodation of a Close Object and Accommodation of a Distant Object?



Accommodation of a Close Object	Accommodation of a Distant Object
The ciliary muscles contract	The ciliary muscles relax
relaxing the tension on suspensory ligaments	Increasing the tension of the suspensory ligaments.
The curvature of the lens increases	the lens decreasing its curvature

53. What are defects of eye?

- ❖ **Short Sightedness (Myopia):** This is a condition in which light rays from a distant object are brought to focus in front of the retina while those from a near object are clearly focused on it.
- ❖ **Long Sightedness (Hypermetropia):** This is a condition in which light rays from a near object are not brought to focus by the time they reach the retina, while those from a distant object are sharply focused.
- ❖ **Astigmatism** This is a condition in which light rays from an object are brought to focus in different planes
- ❖ **Squintedness :** This is an eye defect in which the extrinsic muscle of the eye that control the turning of the eyeball do not co-ordinate accordingly on stimulation
- ❖ **Old Sight (Presbyopia) :** This is a condition in which the light rays from a near object is brought to focus behind the retina, while the rays from the distant object is sharply focused
- ❖ **Colour- blindness:** This is a genetic defect in which certain colours cannot be distinguished by human beings and other animals.
- ❖ **Cataracts:** This is an eye defect associated with old age

54. Define ear?

- ❖ Ear is a complex sense organ whose functions are to perceive sound and maintain balance.

55. State the function of the human ear?

- ❖ To perceive sound and maintain balance.

56. What are the three parts of ear? And define each one?

- ❖ an outer, middle and inner ear
- ❖ The outer ear consists of the pinna and external auditory meatus

- ❖ The middle ear is an air-filled cavity consisting of the tympanic membrane, ear ossicles, and Eustachian tube, oval and round windows.
 - ❖ The inner ear is a fluid-filled cavity connected to the middle ear by the oval window
57. Define pinna?
- ❖ The pinna is a flap and cartilage which partially covers to the external auditory meatus.
58. State the function of pinna?
- ❖ It collects and concentrates sound wave in to the auditory meatus.
59. State the bones of ear ossicles?
- ❖ Malleus
 - ❖ Incus
 - ❖ Stapes
60. What is the Eustachian tube?
- ❖ Is a tube connected the middle ear with pharynx.
61. Which part responsible for hearing?
- ❖ The part that responsible for hearing the cochlea.
62. . What is deafness?
- ❖ Is An hearing defect which makes an individual unable to perceive sound.
63. State categories of deafness?
- ❖ permanent and partially deafness
64. Differentiate between permanent and partially deafness?
- ❖ permanent deafness is a deafness due to damage of cochlea or auditory nerve, while partially deafness
65. Define tympanic membrane?
- ❖ The tympanic membrane is a thin tough membrane that covers the external opening of the middle ear. It consists of a double layer of epidermis, with connective tissue in between the layers.
66. What is the role of the peripheral of the nervous system?
- ❖ The role of peripheral nervous system is to transmit nerve impulses from receptors in sensory organs to CNS and motor nerves that transmit impulse from CNS to the effector organs or to maintain autonomous function of the body.
67. What is an impulse? How impulse passes through the synapse?
- ❖ an impulse is the action potential which is transmitted as a nerve impulse along the neuron. Or is an electrical transmission which travels across a nerve
68. What are cranial nerves?
- ❖ The nerves that arise from the brain and form part of peripheral nerve system associated with receptors and effector.

69. What is the difference between adrenal cortex and adrenal medulla?

- ❖ Adrenal cortex is that influence or regulate salt and water balance in the body
- ❖ Adrenal medulla is that increase blood pressure and heart rate when the body experienced to the stress

70. State the function of node of Ranvier?

- ❖ Is to help propagate the nerve impulse and speed up transmission.

71. Differentiate the cones and rods/

- ❖ the cones contain photochemical pigment called iodeosin
 - The cones occur in fovea centrals or yellow spot
 - Each cone has its own bipolar neuron
 - Its lack retina convergence
 - It have high visual acuity
- ❖ Rods contain pigment called Rhodopsin
 - It have retinal convergence
 - They have low visual acuity
 - It's found periphery of retina

72. Define blind spot?

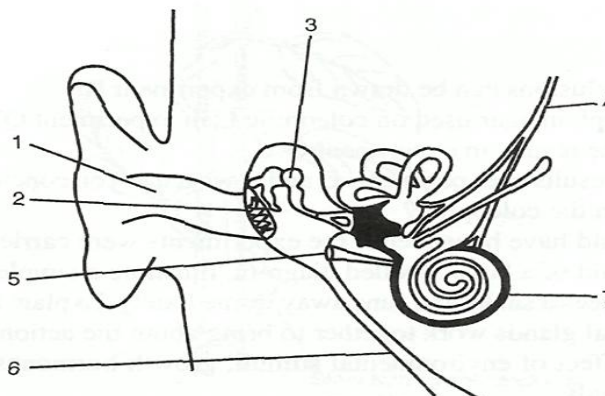
- ❖ blind spot is the Area where optic nerve enters the eye

73. State causes of the following

- a) A stigmatism
 - b) Short sightedness
 - c) Long sightedness
- ❖ A stigmatism : is cause by unequal curvature of the cornea or lens which produced unequal reflection of the light entering the eye
 - ❖ Short sightedness =is caused by long eye ball it may due to too reflective power of the lens
 - ❖ Long sightedness =is caused by too short eyeball or week lens system

74.

1. Figure 3.35 shows a diagram of the human ear.



- a. Name the structure labelled 1-7.
- b. In which region of the ear is the velocity of the sound fastest?
- c. What substance is produced by structure 1?
- d. Give the function of structure 6.
- e. From structure 7, how does hearing finally take place?
- f. State the other functions of the ear apart from hearing.
 - ❖ a)=1)external Auditory meatus is ear canal 2) malleas 3) incus 4)Auditory nerve 5)Round window 6)Eustachian tube 7)Cochlea
 - ❖ b)the region of the ear is the velocity of the sound fastest is outer ear
 - ❖ c)Substance is produced by structure 1 is wax structure
 - ❖ d)the function of structure 6 is to equalize air pressure b/w the middle and outer ear to prevent distortion or to balance the pressure b/w middle and outer ear
 - ❖ e)small hairs in the cochlea are moved by vibrating fluid which triggers impulse and travel to brain
 - ❖ f) Maintain for body balance

75. When a person's hand accidentally touches a hot object it is quickly withdrawn. With the aid of a large labelled diagram explain what causes this response.

- ❖ when the hand touches a hot object impulse is sent through the sensory receptor for heat to the spinal cord through the intermediate neurons and other neurons bring impulse which makes muscle contract and pull the hand from the hot surface

76. State four differences between co-ordination of the human eye's internal response to light and that of tropic movement of the flowering plant in response to light,

(b) Which structure in the ear detects: (i) Sound waves? (ii) Change in posture?

- ❖ Four differences between co-ordination of the human eye's internal response to light and that of tropic movement of the flowering plant in response to light,

Animal eye response

tropic movement of plant

Response is fast

Response is low

Involves transmission of impulse

Involves action of hormones auxin

Locomotory response

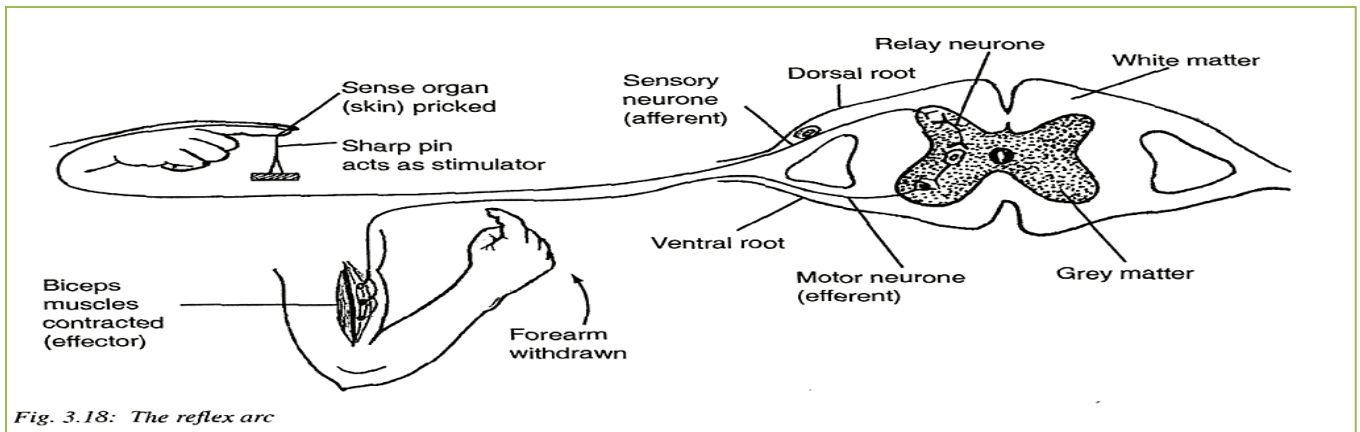
growth curvature response

Response to amount triggering impulse

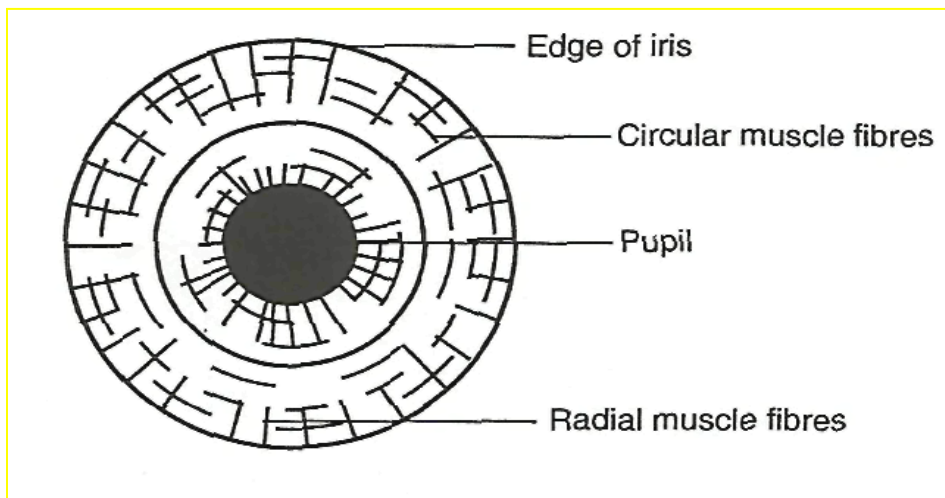
response quality light

- ❖ b)the structure ear detects I)is cochlea II)semicircular canals change posture

77. . (a) With the aid of a large labelled diagram, illustrate a simple reflex arc.
 (b) A person sees a snake and runs away immediately. Explain how the nervous system and adrenal glands work together to bring about the action observed.



- ❖ the rays from the snake enter through the cornea and send impulse to the brain ,then the brain interprets ad causes adrenal glands to secrete adrenalin and causes the person runs by sending impulses to the muscles of the legs
78. The following figure shows the internal arrangement of the muscle fibres in the iris of human eye.



- (a) How is the pupil affected by the contraction of:
- (i) Circular muscle fibres?
 - (ii) Radial muscle fibres?
- (b) Where are the light-sensitive cells located in the eye?
- ❖ A) circular muscles fibres become smaller or reduce size of the pupil and if the radial muscles fibres become enlarge
 - ❖ b) The light sensitive cells located on the retina on the eye

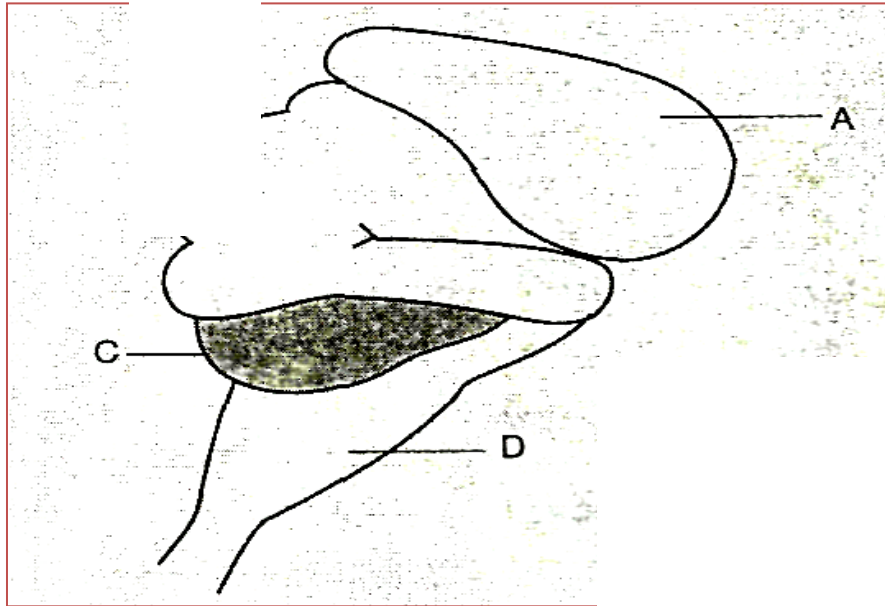
79. How is the fovea centralis adapted for its function in the human eye?

- ❖ because fovea centralis has greater concentration of cones and is in the centre of retina

80. Nocturnal animals such as the owl are capable of seeing fairly well at night. What two retinal adaptations have made this possible?

- ❖ the two retinal adaptations that have made this possible are: nocturnal animals a) have more rods than cones and b) rods are very sensitive to light of low intensity

81. The figure below shows the surface view of a human brain.



a) Name the parts labelled A, B and C.

b) State the functions of the part labelled A.

- ❖ A) A is for forebrain c for midbrain d for Hindbrain
- ❖ B) the function of labeled A is for integration of sensory impulses such as vision, hearing and taste. It controls voluntary body movements

82. How many cranial nerves does a human being have?

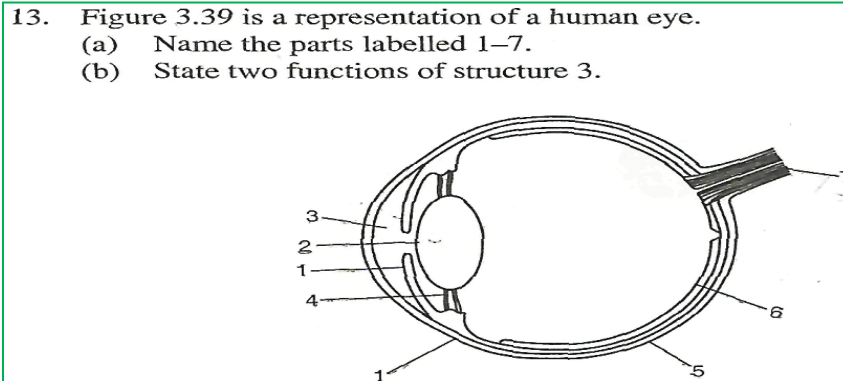
- ❖ 12

83. In which thing does the lacrimal gland produce?

- ❖ Tears

84. The following figure is a representation of a human eye.

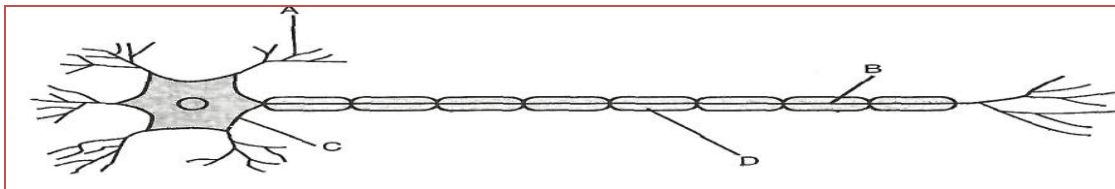
- a) Name the parts labeled 1-7
- b) State two function of structure 3



- ❖ A) the parts labeled are: 1) iris 2) lens 3) aqueous humour 4) suspensory ligaments 5) sclera or outer layer 6) inner layer or retina 7) optic nerve
- ❖ B) has fluids which help to maintain spherical shape of the eyeball
- ❖ -to reflect incoming light towards the retina

85. Study the following figure of the motor neuron:

- (a) Name the parts labelled A, B, C and D.
- (b) State the functions of the parts labelled A, B and D.



- ❖ the parts labeled A, B, C and D are:
- a) A=Dendrites B=axon C=Cell body D=myelin sheath
- ❖ b) State the functions of the parts labelled A, B and D are:
- A=**dendrites** =conducts the nerve impulse from the cell body
- B=**axon** carries the nerve impulse away from the cell body of the neurons towards either an effectors or the brain or the function of the axon to transmit information to different neurons, muscles and glands
- D=**the myelin sheath** helps insulate the axon and is to facilitate of conduction of electric impulse through the nerve cells

Chapter Two: Reproduction

1. What is Reproduction?
 - ❖ The process by which mature individuals produce offspring
2. Define Fertilization?
 - ❖ The fusion of the nuclei of the male and female gamete
3. What are types of reproduction?
 - ❖ Sexual and asexual reproduction
4. What is importance of reproduction?
 - ❖ Quality improvement and Procreation
5. Where the Cell division starts with?
 - ❖ Starts the division of the nucleus
6. What is Chromosomes?
 - ❖ In the nucleus there are number of long thread like structures is called chromosomes
7. When the Chromosomes are present in the nucleus?
 - ❖ all the time
8. What is a gonad?
 - ❖ Gametes that are produced by special organs
9. What is zygote?
 - ❖ The sperm fuses with the ovum to produce is called zygote
10. Where fertilization of the mammals can occur?
 - ❖ Can occur external or internal
11. What is the difference between viviparous and oviparous?
 - ❖ Viviparous are Animals which give birth,
 - ❖ Oviparous are Animals which lay eggs.
12. Where the human male sperm is stored in?
 - ❖ In epididymis
13. What is made up of the testis of the males?
 - ❖ are made up of several highly coiled tubes known Seminiferous tubules

14. List the organs of male reproductive system?
- ❖ Testis
 - ❖ Epididymes
 - ❖ vas deferens
 - ❖ Urethra
 - ❖ seminiferous tubules,
 - ❖ seminal vesicles
 - ❖ cowper's gland
 - ❖ prostate gland.
15. List the female reproductive organs?
- ❖ Vagina
 - ❖ oviduct
 - ❖ uterus
 - ❖ Cervix
 - ❖ ovaries
16. What is the other name of vagina?
- ❖ Birth canal
17. What is implantation?
- ❖ The attachment of the blastocyst to the wall of the uterus by the villi
18. Define ectopic pregnancy?
- ❖ The life threatening condition in which the embryo implants outside the uterus
19. What is gestation period?
- ❖ The period between conception and birth
20. What is Premature birth
- ❖ If the birth occurs after seven months but before full term
21. What is miscarriage?
- ❖ Birth that occurs before the completion of six month and the baby is not survive
22. Define A sexual reproduction?
- ❖ Production of offspring from a single organism without the fusion of gametes.
23. What is chromatids?
- ❖ Each chromosome is made up of two parallel strands
24. What is Centromere?
- ❖ Each pair of chromatids is connected at the center point by structure called Centromere

25. Define homologous chromosomes
- ❖ Homologous chromosomes that are chromosomes are like in appearance although their genetic composition may be different.
26. What are the following terms a) centrioles b) vitelline membrane c) gestation period
- ❖ a) centrioles are the organelles that take part cell division.
 - ❖ B) Vitelline membrane undergoes a change which stop any other sperm from entering the ovum.
 - ❖ c) Gestation is the period between fertilization and birth. The human Gestation period is 9 months or 40 weeks
27. State the layers of the uterus.
- ❖ Endometrium(inner layer)
 - ❖ Myometrium(middle layer)
 - ❖ Perimetrium (outer layer)
28. State the layers of embryo.
- ❖ Allantois
 - ❖ Chorion
 - ❖ amnion
29. What are made of penis?
- ❖ Penis are made of spongy tissue , muscle and blood vessels.
30. What is the sperm consists of?
- ❖ It consist of an ovoid head, short neck, middle piece and tail
31. Define is gene?
- ❖ Along the length of the chromosome is a series structure called gene
32. What are types of cell division?
- ❖ There are two types of cell division and they are Mitosis and meiosis
33. In which mammals their fertilization occur external?
- ❖ Amphibians and fish
34. Where Meiosis occurs?
- ❖ Gametes or Sex cells
35. What is cervix?
- ❖ Is The Lower narrow end of the uterus which leads into the vagina
36. Define oviduct?

- ❖ is a tube with an expanded funnel shaped opening which conducts ova released by the ovary to the uterus

37. What is Endometrium?

- ❖ is the lining or inner layer of the uterus

38. Tell the correct order of the stages in mitosis?

- ❖ Interphase- → prophase- → metaphase- → anaphase- → telophase

39. What happens during each phase of mitosis?

- ❖ **Prophase:** chromosomes condense and become visible, mitotic spindle forms and nuclear envelope breaks up.
- ❖ **Metaphase:** chromosomes line up on equator of cell
- ❖ **Anaphase:** sister chromatids separate and move to opposite poles of the cell.
- ❖ **Telophase:** nuclear membrane reforms around the daughter nuclei, chromosomes decompose, spindle disappears.

40. Define placenta?

- ❖ The structure that connects the fetus with the mother through the umbilical cord is known as Placenta

41. What is allowed and do not allowed the placenta to pass or not?

- ❖ This table below is summarized the exchange of placenta:

<i>What is allowed to pass through the Placenta</i>	<i>What is not allowed to pass through the Placenta</i>
(a) From the mother to the foetus. (i) Oxygen. (ii) Digested food substances like; glucose, amino acids, fatty acids, glycerol. (iii) Vitamins. (iv) Mineral salts. (v) Mineral hormones. (vi) Water. (vii) Antibodies and antigens. (b) From the foetus to mother. (i) Carbon (IV) oxide. (ii) Nitrogenous waste products.	(i) All the blood cells. (ii) Plasma proteins. (iii) Most bacteria.

42. Define parental care?

- ❖ The attention given to the new born by providing food and protection

43. Define Caesarean delivery?
- ❖ is a surgical incision of the abdominal and uterine walls for the delivery of the offspring
44. List the secondary sexual characters in males?
- ❖ The deepening of the voice,
 - ❖ Growth of the hair in pubic region and armpit regions and sometimes on the chin.
 - ❖ The body becomes more masculine,
 - ❖ The testes enlarge and begin to produce sperms.
45. List the secondary sexual characters in females?
- ❖ Development of the mammary glands,
 - ❖ Enlargement of the pelvic girdle and widening of the hip.
 - ❖ Hair grows in the pubic and armpit regions
 - ❖ The entire body becomes feminine.
 - ❖ Internally the ovaries mature and start releasing eggs and the girl begins to menstruate.
46. What is the difference between oestrogen hormone and progesterone hormone?
- ❖

<i>Oestrogen</i>	<i>Progesterone</i>
Growth of mammary glands Inhibits Folical Stimulating Hormone release Inhibits prolactin release Prevents infection in uterus Increases size of uterine muscle cells Increases ATP and creatine phosphate formation Increase sensitivity of myometrium to oxytocin	Growth of mammary glands Inhibits Folical Stimulating Hormone release Inhibits prolactin release Inhibits contraction of myometrium

47. Tell the abbreviation of the word AIDS?
- ❖ Acquired immune deficiency syndrome
48. What is menopause?
- ❖ When the Majority of women stop to ovulate at the age of 45
49. Where the fertilization in human being occur?
- ❖ It occurs in fallopian tubes
50. Define ovulation?

- ❖ The process by which an ovum is released from the ovaries
- 51. What is Amniotic sac?
 - ❖ The structure that cushions and protects the embryo is called Amniotic sac
- 52. Where are the male gametes in the flower?
 - ❖ Anther
- 53. What are types of A sexual reproduction?
 - ❖ Binary fission in amoeba.
 - ❖ Spore formation in *Rhizopus* sp.
 - ❖ Budding in yeast.
- 54. What is Binary fission ?
 - ❖ is the simplest form of asexual reproduction.
- 55. What is spore?
 - ❖ is a small reproductive unit which is usually microscopic and unicellular containing a small amount of cytoplasm and a nucleus
- 56. What is Rhizopus ?
 - ❖ is a saprophytic fungus which grows on substrate like bread, rotting fruits and other decaying organic matter.
- 57. Define mycelium ?
 - ❖ The vegetative body mycelium which consists of many branched threads called hyphae
- 58. What is the difference between stolons and sporangiophora?
 - ❖ The horizontal hyphae are called **stolons**.
 - ❖ The hyphae which grow vertically are called the **sporangiophore**.
- 59. What is Budding ?
 - ❖ is a form of asexual reproduction in which a new individual is produced as an outgrowth (bud) of the parent, and is later released as a self-supporting, identical copy of the parent
- 60. What is pollination ?
 - ❖ The transfer of pollen grains from the anther to the stigma is called pollination
- 61. Describe how budding occurs in yeast?
 - ❖ Budding is a form of asexual reproduction in which new organism created as a smaller out growth or bud on the outside of the parent. Buds will break off and live independently or remain attached and form a colony. Organisms that reproduce by budding take place in unicellular fungi such as yeast.

62. List ways in which asexual reproduction occurs giving suitable examples in each case?

- ❖ ways in which asexual reproduction occurs as in binary fission .e.g. amoeba. Spore formation .e.g. Rhizopus. Budding .e.g. yeast

63. What are the advantages of asexual reproduction?

- ❖ Has good qualities from the parents are retained in offspring without any variation.
- ❖ Does not dependent on processes such as pollination, fertilization and the dispersal seeds and fruits.
- ❖ It often gives rise to dense clumps of plants which do not encourage competitors.

64. Use a well labelled diagram to explain how asexual reproduction occurs in:

(a) Bread mould

(b) Amoeba?



Two daughter amoebae-products of binary fission

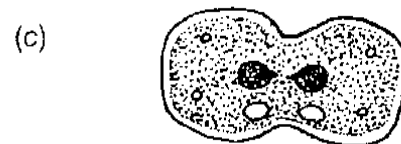
Fig. 3.8: Binary fission in amoeba



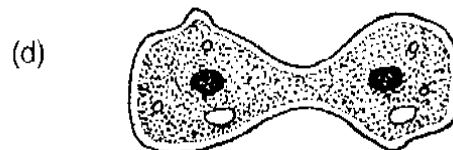
A mature Amoeba



The amoeba retracts the pseudopodia and attains an oval shape ready to start fission: Note the **nucleus** in the early stages of division



The cytoplasm in the first stages of division



The cytoplasm in the last stages of division

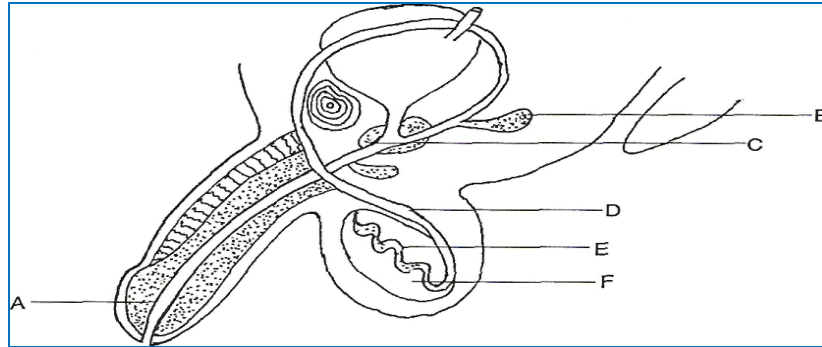
Asexual reproduction occurs in amoeba and bread mould involve this diagram above

65. What are the differences between asexual and sexual reproduction?

- ❖ sexual reproduction involves the fusion of male and female gametes to form zygote, while asexual reproduction does not involve gametes.

66. Figure 3.52 is a section through a male urinogenital system:

- Name the structures labelled A to F.
- State the functions of each of the named parts in (a) above.
- What are the functions of the fluid produced by structure labeled.
- What are the advantages of internal fertilisation.



- ❖ **(a) A- urethra, B- seminal vesicles, C- prostate gland, D- sperm duct or vas deferens, E- epididymis, F- testis.**

(b) Function of each parts are these below:-

- ❖ **urethra:** is a long tube ordinarily used for expulsion of urine to the exterior. Also transport sperm and fluids called semen.
- ❖ **B- Seminal vesicles**= it provides an alkaline fluid which contain nutrients' for the spermatozoa.
- ❖ **C- prostate gland**= secrete an alkaline from which neutralized the acidity of vaginal fluid.
- ❖ **D- sperm duct or vas deferens**= is a narrow connects the epididymis to the urethra which is to the ejaculatory duct.
- ❖ **E- epididymis**= to store sperm.
- ❖ **D- Testes**= paired structure in the male whose function is to produce sperm.

(c) functions structure labeled C

- ❖ Secrete an alkaline from which neutralized the acidity of vaginal fluid.

(d) The advantages of internal fertilisation.

- ❖ Occurs within the body's female.
- ❖ Gives protection of gametes and fertilised eggs.

67. A) Describe how fertilization occurs in a named flower.

(b) How is a seed formed?

(c) What are the differences between a seed and a fruit?

- ❖ fertilization occurs in flower into two ways :-

1. Cross pollination

2. Self-pollination

- ❖ (b) The zygote undergoes mitotic division and develops to become embryo. The embryo has plumule (young shoot), the radicle (young root) and one or two cotyledons. The primary endosperm nucleus develops into endosperm. The ovule forms the seed while the ovary develops into a fruit
- ❖ C) When the primary endosperm nucleus develops endosperm the ovule formed seed. While fruit is described as fully grown fertilized ovary containing fully developed seeds.

68. a)What are the characteristics of an insect-pollinated flower?

(b) Define cross-pollination.

- ❖ Characteristics of an insect-pollinated flower are to visit such flower for the purpose of getting nectar.
- ❖ (b) Cross-pollination:- transfer of anther of one flower to the stigma of another flower of the same species.

69. Describe the part played by each of the following in reproduction:

(a) Androecium. (b) Gynoecium. (c) Corolla.

- ❖ Androgium:- male reproductive parts of the flower, consists one or more stamen. Stamen consist of: filament and anther as its tip. Anther consists four pollen sac, which contain pollen grain {contain male gamete}.
- ❖ (b) Gynoecium: female parts of the flower, consist carpels (stigma, style and ovary inside ovary is ovule-contain female gametes). style:- the long , slender part of a pistil(carpel) that supports the stigma. Style connects the stigma and the ovary; contains ovules (eggs) which are the female reproductive cells.
- ❖ (c) Corolla (petal):- often brightly colored and attracts insects for pollination.

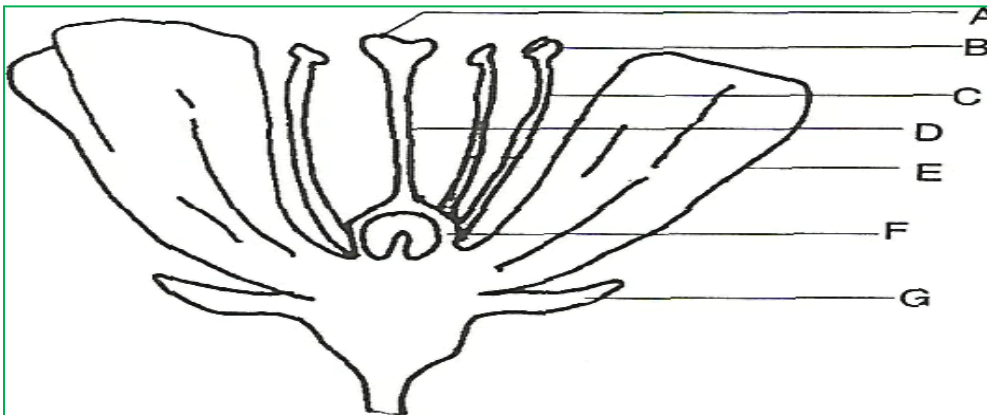
70. Why is sexual reproduction considered to be better than asexual reproduction in some flowering plants.

- ❖ Because of Sexual reproduction is as significant in plants as it is in mammals, where asexual methods are virtually unknown.

71. What is the physiological significance of having testes outside the body of the human male?

- ❖ The position of the testes outside the body is significant as it provides a cooler environment for sperm production. Sperms develop best at a lower temperature than that of the body.

72. Look the following figure of a flower section and answer the questions that follow.



- (a) Name the parts labelled above.
- (b) Which of the labelled parts constitute the gynoecium of the flower?
- (c) This flower has both stamen and carpels. What term is used to describe such a flower?
 - ❖ A) A- stigma, B- anther, C- filament, D- style, E- petal (corolla), F- ovary, G- calyx (sepal)
 - ❖ (b) Gynoecium composed of:- stigma, style and ovary.
 - ❖ (c) The flower has both stamen and carpels the term is used to describe such a flower is Essential flower.

73. What is bisexual flower?
 - ❖ Bisexual flower is a flower that has both male and female reproductive organs.
74. Write the essential parts of the flower?
 - ❖ Androecium
 - ❖ Gynoecium
75. Write the types of flower according to the sepals?
 - ❖ Polysepalous
 - ❖ Gamesepalous
76. Write the types of flower according to the petal?
 - ❖ Polypetalous
 - ❖ Gamepetalous
77. What are agents of pollination?
 - ❖ Insect
 - ❖ Wind
 - ❖ Animal

❖ Plant

78. Complete the table below.

<i>Disease</i>	<i>Cause</i>	<i>Curative/preventive control measures</i>
Herpes simplex		
Gonorrhea		
Trichomoniasis		

❖

Disease	Cause	Curative /prevention and control
❖ Herpes simplex	<i>Herpes simplex</i>	Avoid indiscriminate sex and contaminated needles and syringes.
❖ Gonorrhea	<i>Neisseria gonorrhoea</i>	Condoms can be used for prevention. Control should also involve public education on dangers of indiscriminate sexual contacts and regular screening and treating of people who might be having the disease and are not seeking medical attention
❖ Trichomoniasis	<i>Trichomonas vaginalis</i>	Control involves avoiding sharing of linen, avoiding indiscriminate sex and high personal hygiene in the genitals.

79. A) Where do the following processes occur in the human body:
- Spermatogenesis.
 - Oogenesis.
- (b) What is the main difference between the two processes in (a) above?
- ❖ A) (i) Spermatogenesis. Occurs in the testes (ii) Oogenesis. occurs in the ovaries.
 - ❖ B) The difference between Spermatogenesis and Oogenesis. Are summarized here

Spermatogenesis	Oogenesis.
1. It occurs in the testes	1. It occurs in the ovaries
2. Spermatogonia change to primary spermatocytes	2. Oogonia change to primary oocytes
3. A primary spermatocyte divides to form two spermatocytes	3. A primary oocyte divide to form one secondary oocyte and one polar body.
4. A secondary spermatocyte divide to form two spermatids	4. A secondary oocytes divides to form one ootid and one polar body
5. No polar body is formed	5. Polar bodies are formed

80. Explain the meaning of the following terms in human reproduction:
- Implantation.
 - Ovulation.
 - Parturition.
- ❖ The attachment of the blastocyst to the wall of the uterus by the villi is called **implantation**.
 - ❖ (b) The villi together with endometrium develop into a special organ called **placenta**.
 - ❖ (c) the process giving birth, baby born; an offspring is called **parturition**

81. Discuss the dispersal of fruits and seeds under the following headings:
- Water dispersal.
 - Animal dispersal.
 - Wind dispersal.
 - Self dispersal.
- ❖ **Animal dispersal:** - fresh fruits are eaten by animals and the seeds pass through digestive tract undamaged and are passed out with faeces; e.g. tomato and guavas. Some fruits have coats that stick on the animal fur. Later the seeds are fall off on their own.
 - ❖ **(b) Water dispersal:** - fruits and seeds dispersed by water need to be light so as to float on water and their coats to be waterproof. Waterproof are the fruit pericarp and seed testa. The fruits are then carried away to a new location .e.g coconut.

- ❖ **(c) wind dispersal:-**fruits and seeds are generally light and small in order to be carried by the air. Dispersal is achieved by the following methods:

(a) Censor mechanism: - the fruit which is capsule shaped, is either split as in simsim and tobacco. The capsule is often attached to long stalk. When swayed by wind, the seeds are released.

(b) Extended pericarp and seed coats: - some seeds and fruits have developed hairy and feather-like projections which increase their surface area so that they can be blown by wind and dropped some distance away from their parent plant. .e.g; cotton and sonchus spp.

- ❖ **Self-dispersal:-** this method occurs in the fruits which dry pods, such as legumes. After the pod dries the seed break off from the placenta are placed inside pod. Due to the loss of water from the pod and pressure from within. The pods opens violently along the lines of weakness (sutures). in the process the seeds are thrown away from the parent plant. Such as include:- beans, peas and castor oil.

82. State the functions of each of the following structures:

- (a) Placenta.
- (b) Fallopian tube.
- (c) Amniotic fluid.
- (d) Umbilical cord.
- ❖ (A)acts as a site of exchange of substance between foetus and mother.
- ❖ (b) A tube which conducts ova and uterus, is a place where fertilization occur.
- ❖ (c) Provides a fluid environment which later suspends the foetus providing it with support. It also acts as a shock absorber hence protecting the foetus against mechanical injury.
- ❖ (d) Is tube which increase the length as an embryo develops.

83. Name the hormones which control the following processes in the human body:

- (a) Development of female secondary sexual characteristics.
- (b) Contraction of uterus wall during parturition.
- ❖ (a) Estrogen.
- ❖ (b). oxytocin released from posterior pituitary gland.

84. What are the similarities and differences in the processes leading up to fertilization in a mammal and a flowering plant?

❖ **similarities**

- ☐ Both involve with male and female gametes.
- ☐ Both has division under moises.
- ☐ Both involve sexual reproduction.
- ☐ Both involve their fertilization external and internal.

❖ Differences

- Mammals involve contact their gametes while plant involves as pollination
- Mammals some are oviparous, viviparous and marsupials, while plant do involve at these.

85. Describe mitosis. What are the essential differences between mitosis and meiosis?

- ❖ Mitosis is the type of cell division that takes place during the growth of an organism,

❖ Differences between Meiosis and Mitosis

<i>Meiosis</i>	<i>Mitosis</i>
1. Homologous chromosomes associate with one another.	1. Homologous chromosomes do not Associate with one another.
2. Takes place in two nuclear divisions each having four stages.	2. Takes place in one nuclear division of four stages.
3. Produces four daughter cells, each haploid.	3. Produces two daughter cells, each diploid.
4. Occurs in reproductive organs leading to formation of gametes.	4. Occurs in somatic cells leading to Growth.
5. Chiasma formation takes place and may Lead to crossing-over hence variation.	5. No chiasma formation therefore no cross ing-over hence no variation.

86. What are similarities between meiosis and mitosis?

- ❖ Both takes place in plant and animal cells
- ❖ Both involves the division of the cells

87. Describe the main differences between entomophilous flowers and anemophilous flowers.

- ❖ entomophilies flower are those pollinated by insects, while anemophilous flower are those pollinated by wind

88. Describe the hormonal control of the production of gametes and the development of secondary sexual characteristics?

- ❖ Auxin are group of growth hormones responsible for such processes as growth, root formation and apical dominance.
- ❖ Auxins that are produced in plants include the indoleacetic acid (IAA), regulate aspects of plant growth, such as flowering, fruit development and aging. And also gibberellins are plant hormone that are formed in seeds, young leaves and roots.

89. Compare the advantages and disadvantages of asexual reproduction.

- ❖ The advantages of asexual reproduction are listed here.
- Has good qualities from the parents are retained in offspring without any variation.

□ Does not dependent on processes such as pollination, fertilization and the dispersal seeds and fruits.

□ It often gives rise to dense clumps of plants which do not encourage competitors.

❖ **The disadvantages of asexual reproduction are.**

□ the new offspring being exactly similar to the parent would carry even **undesired qualities** from the parents.

□ there are no variations; the offspring may not be able to withstand **changing environmental** conditions.

□ Plants produced through asexual reproduction usually **mature faster** than those from seeds.

□ this could possibly bring about **over-crowding** and stiff competition whereby only a few members will survive.

□ Asexual reproduction gradually reduces the strength and vigour of the succeeding generation.

90. What is the importance of the pollen tube in fertilization in plants?

❖ is the place where pollen grain sent out to move down style and ovaries towards in micropyle.

91. What do you understand by the term double fertilization in plants?

❖ Double fertilization:- one of the male nuclei fuses with the egg cell nucleus, to form diploid zygote which develops into an embryo., while the other male nucleus fuses with polar nucleus to form triploid nucleus. This is the primary endosperm nucleus. This double fertilization is rarely in flowering plants.

92. Figure 3.54 represents stages in cell division.

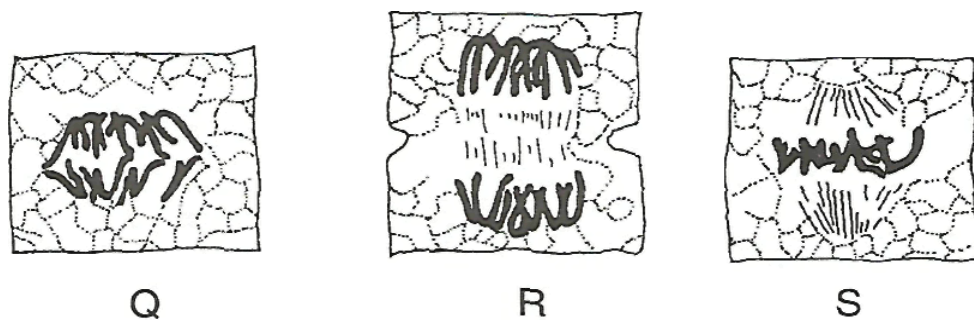


Fig 3.54

a) Identify the type of cell division represented.

(b) Name the stages represented in the diagrams Q and S.

(c) Name regions in plants where the division actively takes place.

❖ R- mitosis

❖ (b) Q- anaphase, S-Metaphase.

- ❖ (c) in apical growth and meristematic growth

93. Identify four ways through which the HIV/AIDS virus is transmitted.

- ❖ Through sexual intercourse.
- ❖ It can also be spread through blood transfusion.
- ❖ Use of contaminated surgical instruments.
- ❖ Infected mothers can transmit HIV/AIDS to babies during birth and through breast milk.

94. The ovaries of an expectant woman can be removed after the first four months of pregnancy without terminating pregnancy. Explain.

- ❖ Because ovaries produce ova, if removed after first four months of pregnancy, so the organ already produced ovum and fuse with sperm, zygote formed the pregnancy develops in the uterus.

95. Describe the following diseases under the following headings. Candidiasis, Gonorrhea, Syphilis.

- (a) Causative agent.
- (b) Mode of transmission.
- (c) Symptoms.
- (d) Control measures.

❖ **candidiasis:-**

(a) **Causative agent:-** caused by yeast-like fungus called *Candida albicans*.

(b) **Mode of transmissions:-** usually transmitted through sexual contact.

(c) **Symptoms:-** itching and burning sensation of the genital organs. This may be accompanied by a white discharge from the vagina which does not smell

(d) **Control measure:-** use of antibiotics which kill bacteria that keep *Candida* population in control and keeping proper aeration of the genital region by use of pure cotton and loose pants. Also may transmitted by use anti-fungal drugs.

❖ **Gonorrhea:-**

(a) **Causative agent:-** caused by a bacterial infection called *Neisseria gonorrhea* which infect the urethra in males and the vaginal tract in the females.

(b) **Mode of transmissions:-** The most common mode of transmission is through sexual intercourse.

(c) **Symptoms:-** itching of the urethra, a yellowish discharge and pain when urinating in males. In females these symptoms are not clear

(d) **Control measures:-** Public education on dangers of indiscriminate sexual contacts and regular screening. Condoms can be used for prevention.

❖ **Syphilis:-**

(a) **Causative agent:-** caused by a spiral shaped bacterium (spirochaetes) called *Treponema pallidum*.

(b) Mode of transmissions:- through sexual intercourse. Also transmitted through blood transfusion. Infants may contract the disease during birth.

(c)) Symptoms:- **has primary, secondary and tertiary stage.**

Primary stage:- manifests itself by the presence of a chancre or a solitary painless ulcer on genital or mucous membranes.

Secondary stage:- occurs after six months and manifests itself as rashes or mucous patches. Macules (discoloured spots) and papules (pimples on skin) may appear on hands, feet, oral cavity, lips and genital areas.

The last stage:- becomes systemic affecting the whole body

96. State the structure of female reproductive system?

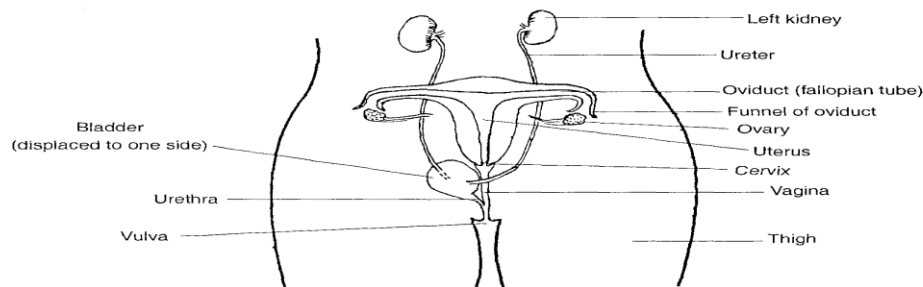


Fig. 3.38(a): Female reproductive system (front view)



97. State the structure of male reproductive system?

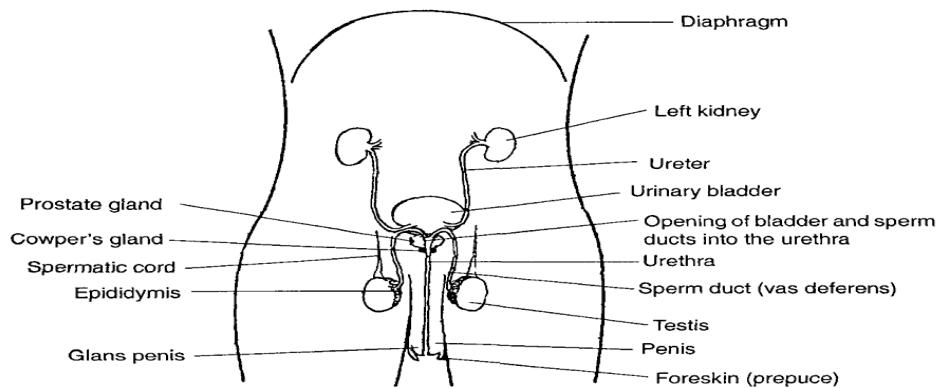


Fig. 3.36(a): Male reproductive system (front view)

Chapter Three: Genetics

98. What is genetic?

- ❖ Genetic is a branch of biology that study of heredity and variation.

99. Define variation?

- ❖ Variation is the observable difference among the living organisms.

State types of variation.

- ❖ Types of variation are continuous and discontinuous?
- ❖ discontinuous variation is type of variation which has definite distinct group with no intermediate form where as continuous variation also is type of variation which exhibits a wide range of differences for the same characteristics from one extreme end to another end.

1. State causes of variation?

- ❖ causes of variation are:

- Gamete formation
- Fertilization
- Mutation

2. Who is the father of geentics?

- ❖ Gregor Mendel

3. How many ways gamete formation can causes variation?

- ❖ Gamete formation can causes variation in two ways these are: independent assortment and crossing over.

4. Explain crossing over?

- ❖ Between homologous chromosomes that results in recombinant chromosomes.

5. What is chromosome?

- ❖ long thread like structure that are found in the nucleus of the cell is called chromosomes

6. .Define cytokinesis?

- ❖ Is the process by which the cytoplasm divides ,forming two distinct cells

7. Explain chromatid?

- ❖ Each chromosome is made up of two parallel strands called chromatid, each pair of chromatids' is connected at a point called centromere.

8. Define DNA?

- ❖ DNA is the nucleic acid that stores and transmits genetic information from parents to offspring

9. State DNA components.

- ❖ DNA is a polymer formed from nucleotides, each nucleotide is consist of three part namely pentose sugar (5-carbon sugar called deoxyribose), phosphate group and one of the nitrogenous bases

10. How nitrogenous bases do make base pairing?

- ❖ each nucleotide is connect nitrogenous bases with a hydrogen bond so adenine always combine with thymine in a DNA and cytosine always connect guanine forming double strand of DNA

11. What is gene?

- ❖ gene is the molecular unit of a heredity of living organism which transmitted from parents to offspring

12. State role of DNA.

- ❖ DNA plays important role by:-
 - Storage in genetic information in a coded form.
 - Enables transfer of genetic information unchanged from parent to offspring.
 - Protein synthesis.

13. Explain DNA replication. ?

- ❖ DNA replication is the process of producing two identical replicas from one original DNA molecule. DNA is made up of two strands and each strand of the original DNA molecule service as a template for the production of the complementary strand.

14. Explain the role of DNA in protein synthesis ?

- ❖ The role of deoxyribonucleic acid or DNA in protein synthesis is guiding to the structure of the proteins being produced. Without DNA, the ribosome could not know what order to put amino acids in the cell.

15. What is codon ?

- ❖ Is the set of bases as triplet is called codon.

16. What is the difference between DNA and RNA?

The difference between DNA and RNA is summarized here “

DNA	RNA
1. DNA contains the sugar deoxyribose, 2. DNA is a double-stranded molecule 3. DNA is stable under alkaline conditions 4. DNA is responsible for storing and transferring genetic information 5. DNA uses the bases adenine, thymine, cytosine, and guanine;	1. RNA contains the sugar ribose 2. RNA is a single stranded molecule. 3. RNA is not stable. 4. RNA directly codes for amino acids and as acts as a messenger between DNA and ribosomes to make proteins. 5. RNA uses adenine, uracil, cytosine, and guanine. Uracil differs from thymine in that it lacks a methyl group on its ring

17. Define sex chromosomes?

- ❖ The genes that determine whether a child becomes a male or female are located on the specific pair of chromosomes

18. What is the monohybrid inheritance?

- ❖ Monohybrid inheritance is the one characteristics that controlled by single pair of hereditary factors contributed by both parents.

19. What is allele?

- ❖ The pair of genes is called alleles.

20. What is genotype and phenotype?

- ❖ The genetic constitution of an organism is known as genotype and the outward appearance of the organism is called phenotype.

21. What is dominance and recessive?

- ❖ Dominance in genetics is a relationship between alleles of one gene, in which one allele is expressed over a second allele at the same locus. And the second over is called recessive

22. Explain complete and incomplete dominance?

- ❖ When one of the alleles is totally dominated is called complete dominance and when both alleles express themselves equally is called incomplete dominance.

23. Distinguish difference b/w homozygous and heterozygote?

- ❖ When the allelic genes are identical as in TT or tt, this condition is called homozygous
- ❖ while the individual whose allelic genes are Tt is referred to as heterozygote .

24. State the difference between diploid and haploid?

- ❖ When number of chromosomes in the cell are 46 or $2n$ is called diploid number and also when number of chromosomes of the cell are 23 or n is called haploid number.

25. Differentiate F₁ generation and F₂ generation.

- ❖ The F₁ generation is the generation resulting immediately from a cross of the first set of parents (parental generation) and The second filial generation is the result of a cross between two F₁ individuals (from F₁ generation).

26. What is the Punnett square? And pedigree?

- ❖ An alternative method of making genetic crossing is called Punnett square.

Also pedigree is a record, in table form showing the distribution of one or more traits in different generations of related individuals.

27. Explain what you understand by the following terms:?

- | | | |
|--------------|----------------|----------------|
| (a) Genotype | (b) Phenotype | (c) Test cross |
| (d) Linkage | (e) Cross-over | (f) Polyploidy |

- ❖ **A) Genotype:** the genetic makeup (constitution) of an organism that is expressed by letters TT
- ❖ **b) Phenotype:** the external (outward) appearance of an organism I.e dwarf or tall.
- ❖ **C) Test cross:** the crossing of an organism, with an unknown genotype to a homozygous recessive organism.
- ❖ **d) Linkage:** genes found on the same chromosome are called linked genes and form linkage group.
- ❖ **e) Crossing over:** the chromatids of homologous chromosomes break and exchange segments of their genetic material at certain points called chiasmata.
- ❖ **f) Polyploidy:** an increase in the number of haploid sets (23) of chromosomes in a cell. Triploid three sets of chromosomes in a single cell in human a total of 69 chromosomes per cell – tetraploid four sets of chromosomes in single cell in humans a total of 92 chromosomes per cell.

28. Why Drosophila is considered a suitable organism for use in genetic experiment?

- ❖ the fruit fly (Drosophila) is a suitable organism for genetic experiment due to the following reasons:
 - The female lays many eggs resulting in a large number of offspring.

- It has many observable characteristics that are distinct and contrast.
- It is easily bred in the laboratory with minimum requirement.
- It has short generation time. That is 10-14days.
- Offspring can be crossed with their parent at will.
- It is safe to handle because it cannot cause human diseases.

29. State types of mutation?

- ❖ There are two types of mutation (a) chromosomal mutation and (b) gene mutation.

31. (a) what are gene mutations?

(b) What are chromosomal mutations (aberrations)?

(c) What are the causes of mutations?

- ❖ A) Gene mutation is the mutation that involves the change in the structure of a genes. Gene mutations are also referred to as point mutations.
- ❖ (b) Chromosomal mutations (aberrations) are the mutations that involve the changes in the structure or number of chromosomes.
- ❖ (c) causes of mutations are mutagens which are environmental factors that causes mutations such as include exposure to gamma rays, ultraviolet light and a variety of chemicals such as colchicine and mustard gas.

30. State the types of chromosomal mutations (aberrations) and tell of them?

- ❖ There are five types of chromosome mutations sometimes called chromosome aberrations. They are: deletion, duplication, inversion, translocation and non-disjunction. (DDITN)

31. State types of gene mutation and tell of them?

- ❖ types of mutation are four types and they are:- Insertion, substitution, inversion and deletion

32. Name disorders of chromosomal mutation specially non-disjunction?

- ❖ disorders of chromosomal mutations especially through non-disjunction include:-
 - Down's syndrome
 - Klinefelters syndrome
 - Turner's syndrome
 - Polyploidy syndrome

33. Differentiate between Klinefelters syndrome and Turner's syndrome.

- ❖ **Klinefelters syndrome** individuals have extra sex chromosome. They have total of 47 chromosomes in their cells i.e male (xxy) and female (xxx).
- ❖ **While turners' syndrome** is where an individual lacks one (1) sex chromosome. 45 chromosome (xo or yo) in the cells instead of normal 46 chromosome. 45yo= Turner's syndrome in male and 45xo turners' syndrome in female.

34. state symptoms of these:-

- (a) Klinefelter's syndrome in male
- (b) Turner's syndrome in female?

❖ **Symptoms of klinefelter's in male include:-**

- Infertility due to the lack of sperm production.
- Undeveloped testes and reduced facial hair.

❖ **Symptoms of Turner's syndrome in female include:-**

- Undeveloped female characteristics such as,
- Infertile due to lack of ovaries and small uterus.
- No breast developments and short in height.

35. Where occur klinefelter's syndrome in the human being?

- ❖ Can occur in either during spermatogenesis or oogenesis.

36. Name disorders due to gene mutation in human?

- ❖ in Human being examples of disorders in gene mutations include:-
 - Albinism
 - Sick-cell anemia
 - Hemophilia
 - Color-blindness
 - Condrodystrophic dwarfism

37. Differentiate the flowing terms :

- (a) Albinism
- (b) Hemophilia
- (c) Color-blindness

- ❖ Albinism is the condition where the skin pigments , melanin fails and is characterized by light skin, white skin and pick eyes.

- ❖ (b) Hemophilia is an inherited blood disease due to lack of blood clotting

Other definition is inability of blood clotting (especially factor VIII (8)) known as antihaemophilic globulin AHG.

- ❖ (c) Color blindness is the inability to distinguish red-green clours in some people.

38. What is meant by the terms inbreeding and cross breeding?

- ❖ Inbreeding: breeding between closely related individuals
- ❖ Cross breeding: cross between two genetically dissimilar lines.

39. Define the fallowing terms Insertion ,deletion,susbtitue and inversion ?

- ❖ is the addition of an extra base onto an existing DNA strand
- ❖ Deletion is the removal of a gene portion. If the base Thymine (T) is deleted from its position at the indicated section of the DNA strand

- ❖ is the replacement of a portion of the gene with a new portion. If Adenine (A) is substituted by Guanine (G) on a DNA strand the base sequence is altered at this particular portion.
- ❖ If a portion of the DNA strand carrying AC rotates through 180° , that portion is said to be inverted,

40. State the advantages of cross breeding over in breeding?

- ❖ Increasing heterozygosity (desirable qualities)
- ❖ cross breeding show beneficial characteristics
- ❖ Not shown by either of the parents.

41. A) How is sex determined in human beings?

(b) What is the importance of crossing over?

- ❖ A male human being carries the XY (heterogametic) while a female carries XX (homogametic) combination. After meiosis in a male, the spermatozoa can either contain the X or Y chromosome while the female ova will contain only X chromosome. The sex of a child is a matter of chance and depends only on whether a spermatozoon that fertilises the ovum carries X or Y chromosome.

(b) Importance of crossing over is:-

During crossing Over Exchange of genetic material take place at the Chiasma hence resulting more variations.

42. A) What is meant by the term sex-linkage?

(b) Each human somatic (body) cell has 46 chromosomes in its nucleus. How many of these are sex chromosomes?

- ❖ A) The genes that are found on the same chromosome are called **linked genes**. All the linked genes constitute a **linkage group**. Linked genes are inherited together and therefore do not segregate during meiosis.
- (b) The sex chromosomes are two types X and Y. the 22 pairs from female and the 22 pairs from the male are called autosomes; they are responsible for other inherited characteristics.

43. Describe advantages of blood grouping?

- ❖ Knowledge of blood group inheritance is significant in solving parental disputes and useful in blood transfusion.

44. What is genome?

- ❖ Genome is the total genetic content of any cell in an organism which comprises of all genes on all the chromosomes.

45. Describe genetic engineering?

- ❖ Identification of desirable gene, altering, isolating and transferring it from one living organism to another.

46. What is Comparison between Normal Haemoglobin and Haemoglobin HbS?



<i>Normal Haemoglobin (Hb A)</i>	<i>Defective Haemoglobin (fib S)</i>
1. A position in each polypeptide chain is occupied by glutamic acid.	1. The same position in each polypeptide is occupied by valine.
2. Does not easily crystallise in low oxygen concentration such as in the capillaries.	2. Easily crystallises in low oxygen concentration.
3. The haemoglobin is efficient in oxygen loading and transportation.	3. Is not efficient in oxygen loading and transportation.
4. The red blood cells carrying them have the normal biconcave shape.	4. The red blood cells carrying them are crescent or sickle-shaped.

47. Differentiate the flowing terms :

- (a) sickle-cell anemia
- (B) Sickle-cell trait.

- ❖ Sickle-cell anemia is a gene mutation especially substitution of Glutamic acid is replaced by another valine.
 - ☐ Homozygous condition defective genes that direct synthesis the hemoglobin type S (Hbs)
 - ☐ Most RBC are sickle-shaped
 - ☐ Shortage of oxygen are experienced to the body tissue.
 - ☐ Sickle-shaped cells are not able to squeeze through capillaries.
- ❖ (b) sickle-cell trait is the less serious condition
 - ☐ this is heterozygous condition where less than half the number of RBC are sickle-shaped.
 - ☐ the rest of these cells are normal and are efficient in oxygen loading.

48. **Define Genetic Counseling?**

- ❖ This is the provision of information and advice on genetically inherited disorders, their risks and outcomes.

49. What are disorders that individuals can give genetic counseling ?

- ❖ sickle-cell
- ❖ anaemia,
- ❖ albinism,

- ❖ haemophilia,
- ❖ *erythroblastosis*
- ❖ *foetalis*,
- ❖ Klinefelter's syndrome
- ❖ colour-blindness.

50. What are the first steps in genetic counseling ?

- ❖ Physical examination e.g. lack of breasts in Turner's syndrome.
- ❖ Laboratory tests e.g. Blood test for sickle-cell anaemia.
- ❖ Amniocentesis for chromosomal abnormalities in foetus.
- ❖ Family history may be used to determine possible inheritance of the disorder e.g. haemophilia condition.
- ❖ Genetic screening of the defective gene in the population.

51. What are the the final step of counselling the counselor?

- ❖ Gives advice on the quality and likely length of life.
- ❖ Explains the options available e.g.: contraception, adoption, artificial insemination.
- ❖ Genetic counselling encounters limitations e.g.
- ❖ If gene screening shows low prevalence for a certain disorder the affected few may develop stigmatisation.
- ❖ Children suing their parents for disorders inherited.
- ❖ Some of the options available to the individual have serious ethical and socio-cultural implications.

52. Define Gene therapy?

- ❖ is the replacement of faulty genes with normal ones aimed at correcting genetic disorders.

53. **Define Cloning?**

- ❖ This is a type of reproduction where a group of cells arise from a single individual cell without fertilisation.

54. **Define Gene Mapping**

- ❖ This is identifying specific positions occupied by specific genes on a chromosome

55. What are the genes that determine whether a child becomes a male or female?

- ❖ Sex chromosomes

56. Define Non-disjunction?

This is the kind of chromosome abnormality that leads to addition or loss of one or more whole chromosomes.

Chapter four: Ecology

1. Define Ecology?
 - ❖ is the study of the interrelationships of organisms to each other and to their environment.
2. What is Autecology ?
 - ❖ is the study of an individual species within a community.
3. Describe Synecology?
 - ❖ is the study of different species of organisms interacting among themselves within an ecosystem
4. Define Biosphere?
 - ❖ is the part of earth and atmosphere inhabited by living organisms
5. What is habitat?
 - ❖ is a specific locality with a particular set of conditions where an organism lives.
6. What are two main components of an ecosystem?
 - ❖ Biotic factors
 - ❖ Abiotic factors
7. What are types Habitats?
 - ❖ are categorized into terrestrial (land) habitats and aquatic (water) habitats.
8. Define ecological niche?
 - ❖ is the position that an organism occupies in a habitat.
9. Define Population?
 - ❖ Is all members of a given species in a particular habitat, at a particular time.
10. Define community?
 - ❖ is all organisms belonging to different species that interact in the same habitat
11. Define An ecosystem ?
 - ❖ is a natural unit composed of abiotic and biotic factors whose interactions lead to a self-sustaining system
12. Define Biomass ?
 - ❖ is the total dry weight of living organisms at a particular trophic level (feeding level) or per unit area
13. What are Factors in an Ecosystem?
 - ❖ **abiotic and biotic** factors.
 - ❖ Abiotic factors are the non-living environmental factors which affect the distribution of organisms like light, temperature, atmospheric pressure, salinity, humidity, soil texture, pH and wind.
14. What is competition?
 - ❖ The fight between organisms in an ecosystem for food and shelter

15. Distinguish the difference between intraspecific and interspecific competition?

- ❖ Competition between individuals of the same species is known as **intraspecific** While
- ❖ That between individuals of different species is known as **interspecific competition**.

16. Describe symbiosis?

- ❖ Symbiosis is a relationship in which two or more species live together in a close, long term association.

17. What is a food chain?

- ❖ A food chain is the linear sequence in which a living organism serves as a food from another, starting with the producers- consumers and decomposers.

18. What is food web?

- ❖ The flow of interconnecting food chains is called food Web.

19. How is energy transferred along a food chain?

- ❖ The energy flow along a food chain is always unidirectional, from producers to the decomposers.

20. What are the trophic levels?

- ❖ Producers always belong to the first trophic level consumers that directly eat the producers belong to the second trophic level decomposers form the last trophic level.

21. What are the primary consumers?

- ❖ Primary consumers are the living organisms that eat autotrophic organisms (producers).

22. Explain the following terms? a) Mutualism b) Commensalism c) Parasitism

- ❖ A) Mutualism: association in which both organisms benefit from the relationship.
- ❖ B) Commensalism: a relationship in which one organism benefits but does not harm the other one.
- ❖ c) Parasitism: a relationship in which one organism benefits and the other is harmed.

23. What is the difference between photographic light meter and Secchi disc?

- ❖ **photographic light meter** is used to measure light intensity while
- ❖ **Secchi disc** measures light penetration in water.

24. Differentiate wind vane and anemometer?

- ❖ A **wind vane** is used to determine direction of prevailing wind
- ❖ **anemometer** is used to measure the speed of wind
- 25. What does it mean Predation, predator and prey.?
- ❖ **Predation** is the food relationship in which one organism kills another for food and feeds on it either wholly or in part.
- ❖ **predator** is The organisms which kills another for food is referred to as the predator while
- ❖ The one killed is called **prey**.
- 26. Differentiate Salinity and humidity?
- ❖ Salinity refers to the salt concentration of water, causing a division of the aquatic environment into marine, estuarine and fresh water.
- ❖ Humidity refers to the amount of water vapour in the atmosphere.
- 27. Define Parasitism?
 - is the relationship in which an organism obtains nutrients from another live organism without killing it
- 28. what are types of parasites?
 - ❖ Ectoparasite and end parasite
- 29. Define saprophytism?
 - ❖ is a type of nutrition where organisms obtain nutrients from dead organic matter hence causing decomposition
- 30. What are characteristics of populations?
 - They have density, dispersion and population growth
- 31. Define the following terms :a) density) dispersion c)population growth
 - **Density:** Refers to the number of individuals per unit area. For example fifty antelopes per square kilometre.
 - **Dispersion:** is the spread or distribution of organisms in a habitat.
 - **Population growth:** Refers to the rate of increase in numbers.
- 32. What are population methods?
 - *Quadrat method.
 - * Line transect.
 - * Belt transect.
 - * Capture - recapture method.
- 33. What are the four main groups of plants? and define each one?
 - ❖ Xerophytes
 - ❖ Mesophytes
 - ❖ Hydrophytes
 - ❖ Halophytes
 - ✓ **Xerophytes:** are plants adapted to withstand a dry habitat, or to endure conditions of prolonged drought as in arid and semi-arid areas.
 - ✓ **Mesophytes:** A plant living under normal conditions of water supply or in well-watered soils is described as a mesophyte
 - ✓ **Hydrophytes:** Plants which normally grow wholly or partly in fresh water
 - ✓ **Halophytes:** are plants which are able to tolerate very salty conditions in soil and marine water.

34. Define Pollution?

- ❖ the release of substances or forms of energy into the environment by human activities in such quantities whose effects are either harmful or unpleasant to humans or other living organisms.

35. Define pollutant?

- ❖ The harmful substances that pollute the environment

36. What are the main categories of pollution?

- ❖ Namely they are air, water and soil pollution.

37. What are Causes of Air pollution?

- ❖ Sulphur based chemicals e.g. sulphur (IV) oxide (SO_2) and Hydrogen Sulphide
- ❖ Oxides of Nitrogen e.g. nitrogen (II) oxide (NO) and nitrogen (IV) oxide (NO_2)
- ❖ Smoke and Fumes: There contain carbon (II) oxide (CO), carbon (IV) oxide (CO_2) and carbon particles
- ❖ Dust: It is composed of small particles emitted from cement and lime producing industries such as cement works, and also from quarries, road constructions and dusty dry weather roads.
- ❖ Lead (Pb)

38. Define Water Pollution?

- ❖ the pollution of water involves addition of substances or energy forms into water bodies in quantities that are harmful to the living organisms dependent on that water.

39. What are Sources of Water Pollution?

- ❖ Domestic Effluents
- ❖ Industrial Effluents
- ❖ Heat
- ❖ Oil Spillage
- ❖ Agro-chemicals

40. What are Sources of Soil Pollution?

- ❖ Oxides of sulphur e.g. sulphur (IV) oxide
- ❖ Petroleum products
- ❖ Inorganic fertilisers Agricultural inorganic fertilisers contain phosphates and nitrates
- ❖ Solid Waste

41. How can be controlled by water-pollution?**Controls of Water Pollution are**

- ❖ Legislation.
- ❖ Industries should control
- ❖ Proper treatment and disposal of sewage.
- ❖ Encourage the use of unleaded petrol.
- ❖ The public should be educated on correct amounts of inorganic fertilisers and pesticides to be used.
- ❖ Appropriate soil erosion control methods to be put in place such as building of gabions, terraces, mulching and growing of soil cover crops.

42. Define Nuclear energy?

- ❖ is used in the generation of electricity and propelling of nuclear war planes, nuclear propelled ocean vessels, space ships and submarines.

43. What is disease?

- ❖ is a disordered state of a tissue, organ, system or organism, during which its functions are not carried out normally.

44. Complete this table

Disease	Type of organism causing the disease	Mode of transmission	Symptoms of the disease
1. Malaria	caused by a protozoan parasite called Plasmodium.	By biting When the mosquito bites an infected person it sucks blood containing the parasites.	high regular fevers accompanied by profuse sweating punctuated by chills and shivers. Headaches, muscle and joint pains are felt most of the time. The patient lacks appetite and vomits from time to time
2. Amoebiasis	Protozoan called <i>Entamoeba histolytica</i> .	When the amoebae cysts are ingested, the cyst's membrane is digested and the protozoa are released. When they reach the large intestines and the colon, the <i>E. histolytica</i> multiply.	formation of ulcers on the colon wall amoebic dysentery and the faeces contain blood. , dehydration, fever and abdominal pains and severe pains when passing stool.
3. Cholera	bacterium known as <i>Vibrio cholerae</i>		violent diarrhoea and vomiting. This is accompanied by severe abdominal pains. general body dehydration owing to the high frequency of defecation, accompanied by loss of large quantities of water. Death by cholera can be rapid - within 24 hours of infection in extreme

			cases.
4. Typhoid	caused by a bacterium called <i>Salmonella typhi</i>	Eating or drinking contaminated water or food	

Supplementary exercise extra to the questions and answers

1. the other name of the midbrain is called
 - a. quartile corpora
 - b. cerebrospinal
 - c. both a and b
 - d. corpora quadregimina
2. the neuron is also called
 - a. myelin
 - b. nerve cell
 - c. neurons
 - d. None of them
3. the medulla of adrenaline gland receives impulse from the brain which produce hormone
 - a. thyroxin
 - b. corticosteroids
 - c. None of them
4. the muscles that move the eye left and right are called:-
 - a. lateral muscle
 - b. superior or inferior rectus muscle
 - c. ligaments
 - d. all of them
5. The extension from the brain to the Tail is called
 - a. Nerve impulse
 - b. Motor
 - c. spinal cord
 - d. thalamus
6. Nervous system are classified in to
 - a. Neurons and spinal cord
 - b. central nervous and brain
 - c. peripheral and nervous system
 - d. hypothalamus and brain
7. A sperm consists of an ovoid head, short neck, middle piece and
 - a. forens

- b. pens
 - c. vagina
 - d. tail
- 8.** The sun is the main source of energy for all life on earth is called
- a. light
 - b. atmosphere
 - c. sand
- 9.** Plants which normally grow wholly or partly in fresh water are referred to as
- a. hydrophytes
 - b. halophytes
 - c. mesophytes
- 10.** the rate of increase in numbers is called
- a. exponential growth
 - b. population growth
 - c. population decrease
- 11.** A plant living under normal conditions of water supply or in well-watered soils is described as
- a. mesophyte
 - b. halophytes
 - c. herophytes
- 12.** is a condition in which light rays from an object are brought to focus in different planes
- a. Astigmatism
 - b. sistamiation
 - c. synsimation
- 13.** is an air-filled cavity consisting of the tympanic membrane, ear ossicles, Eustachian tube, oval and round windows is
- a. inner ear
 - b. middle ear
 - c. outer ear
- 14.** the process by which mature individuals produce offspring is called
- a. reproduction
 - b. fertilization
 - c. processing
- 15.** a single celled organism in the kingdom Fungi is called
- a. yeast
 - b. parasite
 - c. virusitic
 - d. bacteria
- 16.** flower with a stalk. Is called
- a. regular flower
 - b. Pedicillate flower
 - c. iiregualr flower
- 17.** messenger is

- a. enzymes
- b. hormones
- c. insuline

18......controls basal metabolic activity is called

- a. Thyroxine
- b. cytosine
- c. amylase

19. The egg-laying mammals (monotremes) is called

- a. oviparous
- b. viviparous
- c. navoparous

20. Gonorrhoea is caused by

- a. bacteria
- b. virus
- c. parasite

21. The study of heredity and variation is

- a. genetics
- b. zoology
- c. plankton

22. any chemical substance which when taken into the body is called

- a. Drug abuse
- b. Drug
- c. Drug resistance

23. the posterior extension from the brain to the tail is called

- a. Vertebrate
- b. Spinal cord
- c. Ribs

24. the fusion of the male and female gametes to form a zygote is called

- a. sexual reproduction
- b. asexual reproduction
- c. non sexual reproduction

25. External fertilisation among

- a. reptiles
- b. birds
- c. mammals
- d. amphibians

26. a tube with an expanded funnel shaped opening which conducts ova released by the ovary to the uterus is called

- a. fallopian tubes
- b. oviduct c
- c. anon duct
- d. a and b

27. the attention given to the new born by providing food and protection is called

- a. Antenatal care

- b. postnatal care
- c. Parental Care

28. The fusion of the nuclei of the male and female gametes is known as

- A. procreation
- B. Nutrition
- C. Fertilization

29. There are two types of reproduction and include.

- A. Mitosis and meiosis
- B. Chromosomes and chromatids
- C. Sexual and asexual
- D. All of them

30. All of the following are importance of reproductions except

- A. Quality improvement
- B. Procreation
- C. All above

31. Gametes are produced by special organs known as

- A. Gonads
- B. mouth
- C. testosterone

32. Fertilization of mammals occurs in

- A. Externally
- B. In water
- C. Internally

33. All of the following are the organs of male reproductive system except

- A. Testis
- B. penis
- C. urethra
- D. ovaries

34. Which one of the following is not female reproductive organs

- A. Uterus
- B. penis

C. oviduct

35. The vagina is it's also called

A. Birth canal

B. Fertilization canal

C. oviduct

36. The attachment of the blastocyst to the wall of the uterus by the villi is called

A. Ectopic pregnancy

B. Endometrium

C. Implantation

37. If the birth occurs after seven months but before full term

A. Implantation

B. Gestation

C. Premature birth

D. Caesarian section

38. Each chromosome is made up of two parallel strands called

A. Chromasomes

B. Chromatids

C. centrioles

D. Centromeres

39. Each pair of chromatids is connected at the center point by structure called

A. code

B. Genotype

C. Centromere

40. Along the length of the chromosome is a series structure called

A. Prophase

B. phenyl

C. Genes

41. The process in which female gamete is formed is called

A. Spermatogenesis

B. Oogenesis

C. Menstruation

42. the only organ in animals composed of cells derived from two different organisms, the foetus and the mother

A. Placenta

B. Uterus

C. Fallopian tube

43. All of the following are secondary sexual characteristics of males except

A. Deepening of the voice

B. Production of sperm

C. Widening of hip

44. At which time the Majority of women stop to ovulate ?

A at the age of 60 yrs

B. at the age of 45yrs

C. at the age of 15yrs

45.. All of the following are not sexual transmitted disease

a. Gonorrhea

b. Syphilis

c. Tuberculosis

d. Chlamydia

46. the transparent layer which allows light to enter the eye is:-

a. choroid

b. iris

c. cornea

d. retina

47. the thin round sheet of muscular tissue is known as:-

a. pupil

b. radial

c. iris

d. lens

48. the iris contain two set of muscle are:-

a. ciliary muscles

b. ear ossicle

c. circular and radial muscles

d. aqueous humour and vitreous humour.

49. the light sensitive layer that composed of three layer is:

- a. Iris
- b. ligaments
- c. retina
- d. pupil

50. shorted sightedness can be corrected by:-

- a. convex lens
- b. concave lens
- c. diverging lens
- d. both b and c

51. Astigmatism can be corrected by :-

- a. A converging
- b. convex lens
- c. diverging
- d. cylindrical lens

52. The outer ear consists of:-

- a. Auditory meatus
- b. pinna and external auditory meatus.
- c. both a and c
- d. ear drum and tympanic member.

53. The simplest form of asexual reproduction is called

- a) Binary fission
- b) Budding
- c) Spore formation
- d) Reproduction

54. Testis lie outside the abdominal cavity in the

- a) Scrotal sac
- b) Seminal vesicles
- c) urehtrea
- d) Epididymes

55. The fertilization of human egg by the sperms takes in the

- a) Ovary
- b) Fallopian tube
- c) Vagina
- d) Uterus

56. When the chromosomes are 23 is called

- a) Ovum
- b) Zygote
- c) Haploid
- d) diploid

57. Pollination by wind is called

- a) Anemophily
- b) Hydrophily
- c) Zoophily
- d) Entomophily

58. Plants absorb dissolved nitrates from the soil and convert them into

- a) Free nitrogen
- b) Urea
- c) Ammonia
- d) Proteins

59. The basic functional unit of nervous is called

- a. Neuron
- b. Nerve cell
- c. A and B
- d. None of the above

60. Central nervous is composed of

- a. Brain and spinal cord
- b. Brain and cranial nerves
- c. Brain and sensory nerves

61. The axon is enclosed by a fatty sheath called

- a. Axoplasm
- b. Dendrites
- c. Myelin sheath

62. The meninges consists of :

- a. Dura,pia and anthrea matter
- b. Dura ,pia and water matter
- c. Dura,Pia and Arachnoid matter

63. Rapid involuntary response to a stimulus by organ or organs in body

- a. Reflex action
- b. Quick action
- c. Slow arc

- 64.** Medulla oblongata controls involuntary activities such as
- Breathing
 - Swallowing
 - conulsers
- 65.** Effects of over-secretion of thyroxine hormone is called
- Hypothyroidism
 - Hyperthyroidism
 - Euthyroidism
- 66.** Eustachian tube is a tube connecting the middle ear to the
- Outer ear
 - Inner ear
 - Pharynx
- 67.** The ions involved in impulse transmission are
- Aluminum
 - Sodium
 - Potassium
 - Magnesium
 - Both B & C
- 68.** All of the following are sensory organs
- Ear
 - Skin
 - Tongue
 - Eye
 - Nose
 - All the above
- 69.** The tough outer membrane covering the brain and spinal cord is referred
- Pia matter
 - Dura matter
 - Arachnoid matter
 - All above

- 70.** Animals can be divide into :
- Green and non green animals
 - Vertebrates and invertebrates
 - Green animals and vertebrates
 - Invertebrates and non green animals
- 71.** Vertebrate animals are
- Fish,mammals,amphibians,reptiles and Birds
 - Mammals,sepla,fish and birds
 - Eryl,mammals,fish and amphibians
- 72.** Types of peripheral nervous systems are
- Cranial nervous and spinal nervous
 - Cranial nervous and spinal cord
 - Spinal nervous and spinal column
- 73.** CNS is abbreviated from
- Central noon symmetric
 - Central nervous system
 - Central nervous symmetric
- 74.** PNS is abbreviated from :
- Peripheral nervous system
 - Peripheran neuron systemic
 - Ploy neutron sigma
- 75.** Types of neurons are :
- Sensory
 - Motor
 - Relay
 - All above
- 76.** help to propagate the nerve impulse and speed up the transmission of an impulse this is the function of:
- nodes of ranvier
 - axon
 - neuron
- 77.** The brain is a delicate nervous organ which is encased in bony structure called:
- Cranium bones
 - Skull bones
 - Facial bones
 - A and B
 - All above
- 78.** The human brain is divided into:
- Forebrain,midbrain and hindbrain
 - Tet brain ,lobe brain and hindbrain
 - Temporary,midbrain and hind brain
- 79.** when the inside become positively charged and outside become negatively charged :

- a. polarization
 - b. depolarization
 - c. polarized
 - d. both a and b
- 80.** the endocrine system is also known as:
- a. hormonal gland
 - b. ductless gland
 - c. duct gland
 - d. a and b.
- 81.** the hormone that found in the neck region is:
- a. adrenaline
 - b. thyroxin
 - c. T4
 - d. both b and c
- 82.** the hypothyroidism can be controlled by :-
- a. aspirin
 - b. penicillin
 - c. radioactive iodine
 - d. all of them
- 83.** the myelin sheath is surrounded by
- a. Nodes of Ranvier
 - b. Pons
 - c. Both a and b
 - d. Neurilemma
- 84.** prolonged drug abuse of drugs can cause :-
- a. addiction
 - b. drugs
 - c. drug abuse
 - d. all of them
- 85.** The edge of the eyelids are many hairs is called
- a. eyelash
 - b. eyeball
 - c. eye barrow
- 86.** the tough outer membrane covering the brain and spinal cord of vertebrates is called
- a. pia matter
 - b. Dura matter
 - c. Arrachnoid layer
- 87.** the spinal cord is about weight

- a. 35-40g
 - b. 40-45g
 - c. 30-35g
- 88.** The Human brain is about
- a. 1.3 to 1.4kg
 - b. 1.4 to 1.5kg
 - c. 3 to 5kg
- 89.** Forebrain consists of :
- a. the cerebrum, the thalamus, hypothalamus and the pituitary gland
 - b. The cerebellum, the thalamus, hypothalamus and the pituitary gland.
 - c. The cerebellum, medulla, hypothalamus and the pituitary gland.
- 90.** Hormone is :
- a. Messenger
 - b. Breakdown
 - c. Neutlizi
- 91.** A branch of biology that deals with the study of body structure is called:
- a. Zoology
 - b. Botany
 - c. Anatomy
- 92.** The muscles that move the eye up and down is called:
- a. Superior and inferior rectus muscles
 - b. Posterior and inferior rectus muscles
 - c. Lateral rectus muscles
- 93.** The middle piece of sperm is packed with a large number of
- a. Nucleus
 - b. chromosomes
 - c. mitochondria
 - d. vitamin
- 94.** The mitochondria is produce
- a. Energy
 - b. vitamin
 - c. sperms
 - d. hormones
- 95.** A mature human ovum is spherical in shape with diameter of about
- a. 0.0002m
 - b. 0.002m
 - c. 0.02m
 - d. 0.2mm
- 96.** After ovulation the ovum can remain viable for
- a. 7-23 hr

- b. 14-24 hr
 - c. 8-24 hr
 - d. 15-36 hr
- 97.** After ejaculation the sperm can remain viable for :
- a. 4-7 days
 - b. 2-3 days
 - c. 5-2 days
 - d. 6-8 days
- 98.** From first to third days the mammary gland produce :
- a. Hormone
 - b. enzyme
 - c. colostrum
 - d. ovum
- 99.** The combination of sperm and the hormones which are producing prostate gland and Cowper's gland
- a. Prostate gland
 - b. sperm
 - c. semen
 - d. A and C
- 100.** The gestation period of elephant :
- a. 18months
 - b. 17months
 - c. 42months
- 101.** The gestation of period of human is about :
- a. 9months
 - b. 7months
 - c. 1month

Fill In the Blanks with suitable words

- 1. _____ are categorized into terrestrial (land) habitats and aquatic (water) habitats.
- 2. _____ the position that an organism occupies in a habitat.
- 3. _____ .. is used to measure light intensity while the Secchi disc measures light penetration in water.
- 4. _____ . is measured by a thermometer
- 5. _____ . is measured using a barometer.
- 6. _____ refers to the amount of water vapour in the atmosphere.
- 7. The instrument used to measure humidity is _____.

8. _____ is used to determine direction of prevailing wind.
The speed of wind is measured by anemometer.
9. _____. refers to the salt concentration of water, causing a division of the aquatic environment into marine, estuarine and fresh water.
10. _____. is the measure of how acidic or alkaline water is in aquatic habitat or soil solution.
11. _____ is a parasitic roundworm which belongs to the phylum Nematode.
12. The genus _____ .the largest nematode parasitic to humans.
13. _____ Have two hosts, human beings and pigs.
14. _____. is a parasitic disease of the blood.
15. There are three different species of schistosoma that infect human beings. These include _____ , _____ and _____
16. _____. is spread when people drink water contaminated by a larval form called cercariae.
17. _____ It is caused by a flatworm of the phylum Platyhelminthes of the genus Schistosoma.
18. importance of reproduction are _____. And _____.
19. Parts of ear consist _____. and _____.
20. Defects of eye are among _____. and _____.
21. Common drug abuse _____. and _____.
22. Types of neurons are _____.
... _____. and _____.
23. Meningitis consists of _____.
... _____. And _____.
24. Human brain consists of _____ and _____.
25. Special organs of sense are among _____
26. Some terms describing flowers among _____. And _____.
27. Causes of variation _____. And _____.
28. AIDS _____.
29. HIV _____.
30. STS _____.

31. CNS_____.
32. PNS_____.
33. . Each chromosome is made of two parallel strands called _____.
34. When the lining of the uterus is shed, blood vessels break and bleeding results, this process is called _____.
35. Attachment of blastocyst to the wall of the uterus by the villi is known as _____.
36. The mixture of sperm and fluid is _____.
37. The time from conception until birth is called _____.
38. The _____ is the organ that produces eggs.
39. The testes lie outside the abdominal cavity in the _____.
40. The ring muscles that separates the uterus from vagina is _____.
41. Flower that has all the flower parts, sepals, petals, stamen and carpel is said to be _____.
42. Carpel is the female reproductive part of the flower and is made up of _____, _____ and _____.
43. Stamen is the male reproductive parts of the flower which consists of _____ and _____.
44. The male gametes are called _____ which are made in the testes while the female gametes are known as _____ made in the ovaries.
45. External fertilization occurs in animals such as _____ & _____.
46. Internal fertilization occurs in reptiles, _____ and _____.
47. Father of biology is _____.
48. Biology belongs to a branch of science called _____.
49. Generally biology is divided in to _____. And _____.
50. The genes that are found on the same chromosome are called_____.

Ending

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